PRECISION RUNWAY MONITOR (PRM)
SAN FRANCISCO AIRPORT (SFO)

Antenna location?

Here is the information from the PRM site data, it includes the Lat./Long. for the antenna.

Description	Value			
Version	SFO33			
Airport Name:	San Francisco Internati			
Airport abbreviation (3 characters)	SFO			
Airport mean elevation in feet above sea level	11.1			
Magnetic Variation				
variation (+W/-E)	15.6 E			
variation rate of change per year (+W/-E)	0.0			
reference date	01/Jan/95			
Antenna Data				
height in feet above sea level	74.5			
location				
latitude	37	36'	51.83" N	
longitude	122	22'	21.15" W	
beam zero bearing clockwise from true north in degrees	119.0654			
Delay due to antenna cable length in 1/2 clock cnt (LED rho 0)	34			

Is the X/Y grid referenced to magnetic or true north?

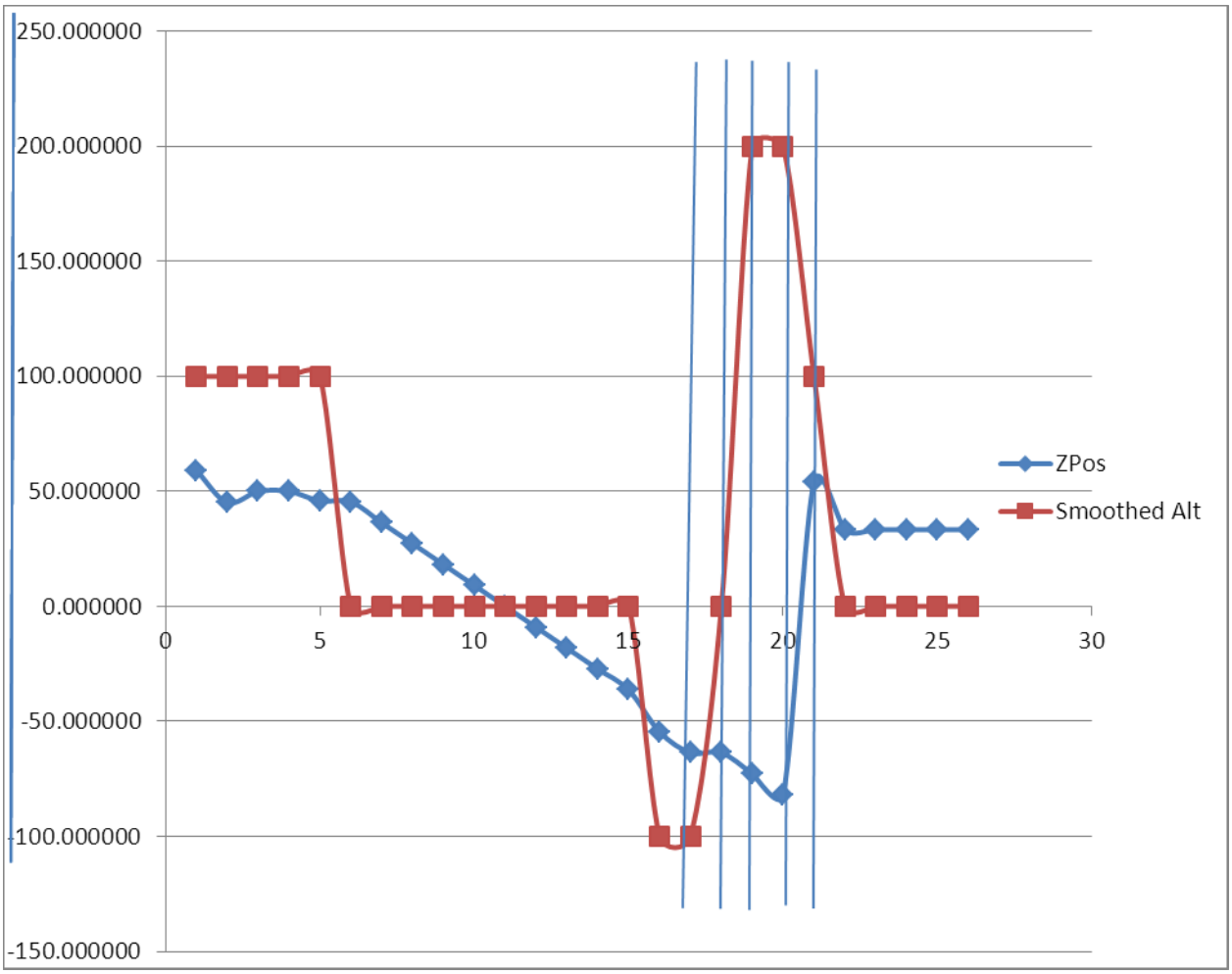
True north is used for the x/y grid with the PRM at 0,0.

Where does the z-alt come from - tracking data?

Z-alt is actually called ZPos in the PRM IDD (see below).

	CoastedPosition	CARTESIAN -- Cartesian Coordinates of Smoothed or Coasted Position
FLOAT	XPos	Target Position X Coordinate in feet from PRM antenna
FLOAT	YPos	Target Position Y Coordinate in feet from PRM antenna
FLOAT	ZPos	Target Position Z Coordinate in feet from PRM antenna

Z-alt or ZPoz is a smoothed value for the altitude as demonstrated in the chart below. The smooth alt in red is the Mode C altitude modified by the local barometric pressure in 100 ft. increments.



ZPos and Smoothed Alt for end of Flight AAR214

Are the raw mode-S altitude reports available?

The PRM is an atcrbs secondary radar and only interrogates Mode 3/A and Mode C.

120A ATCRBS Code From Aircraft Transponder	Smoothed Altitude (Modified with local barometric pressure)
2	99.99969
4166	99.99969
2	99.99969
2	99.99969
4166	99.99969
1	-0.00031
1	-0.00031
4166	-0.00031
1	-0.00031
1	-0.00031
4166	-0.00031
1	-0.00031
1	-0.00031
4166	-0.00031
1	-0.00031
0	-100.00031
4166	-100.00031
1	-0.00031
3	199.99969
4166	199.99969
2	99.99969
1	-0.00031
4166	-0.00031
1	-0.00031
1	-0.00031
4166	-0.00031

Yes, the 120A message contains the actual Mode C reply from the aircraft before it is adjusted for local barometric pressure. The table on the side shows the 120A transponder code replies in the yellow column including the 3/A replies. The blue column is from the 2908 data, which is the PRM modified altitude using the local barometric pressure. The data was aligned using the PRM system clock values.

Note: The final mode C replied altitude is 1 (100 ft.) adjusted by PRM to 0 feet with the actual ground altitude around 12 feet.

Note: the aircraft's mode C replies go down to 0 (-100 feet PRM adjusted) before it jumps up to 3 (300 feet) and goes back to 1 (100 ft).

The full 120A file is in a separate document.